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Original communication

Age differences among victims of sexual assault: A comparison between children, adolescents and adults

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ABSTRACT

The present study describes the characteristics and ascertains risk factors of victims of sexual assault according to three age groups: children, adolescents and adults. Data were retrospectively obtained from a database of forensic medical examination records of sexual assault victims in Bizkaia within a two-year period (2009–2010). Descriptive statistics and uni- and multivariate analyzes were used. Sexual assaults with evidence of physical injury in the examination were significantly associated with the victims' age group and with sexual assaults with penetration. They are inversely associated with vulnerable victims and assaults committed by a known offender. Sexual assaults with penetration are related significantly to older age groups and they are negatively associated with sexual assault committed at the victim's place of residence.

Introduction

There are continued difficulties in unifying data from studies on sexual assaults. This can be explained by multiple factors, such as the experts who conducted the research (medical examiners, emergency physicians, gynecologists, sexual assault physicians, and nurse examiners), the selected group of victims, the place where the research was conducted (sexual assault care centers, public centers for victims, general emergency departments, pediatric emergency departments, telephone surveys, interview-based studies, and self-reported histories), the legal regulation of the political entity, and the terminology used. Ingemann-Hansen, Sabroe, Brink, Knudsen, & Charles[13] reviewed the causes of variation in annual incidences and differences in characteristics of victims and assaults: they found that definitions of the sexual act varied, including the terms rape, attempted rape, sexual assault, touching sexual parts, and sexual intercourse as did the institutions represented, i.e. legal, criminal, medical, forensic, or psychological, demonstrating that the term sexual assault can have a smaller or wider meaning. Alempijevic, Savic, Pavlekic, & Jecmenica,[1] found that although it is widely accepted that sexual violence is a global problem, and is present in every social group, it is difficult to determine the real magnitude of sexual violence. Statistical data regarding sexual violence is limited in particular by the fact that many cases remain unreported, and therefore unrecorded.

According to Figuero and Otero,[8] sexual abuse in children is very frequent in Spain, having an annual incidence of .5 cases per 1000 minors and a prevalence of one case for every six boys and one case for every four girls in minors less than 18 years. Bizkaia is a province of Spain and a historical territory of the Basque Country, with a total population in 2009 of 1,151,704 inhabitants, from which approximately 6% were foreigners.[7] In Bizkaia in 2009, the general incidence for victims that had a medical examination due to sexual assault, both adults and minors, was 9.5 per 100,000 population. The rate for female victims less than 18 years was 52.20 cases per 100,000 population, meaning there would be one report with a forensic medical examination for every 1915.65 girls less than 18 years.[19] Clearly, there are large differences between adults and minors, thus victim's age should be taken into account, since it affects aspects and patterns of sexual assaults. Minors and adults are usually separated, but beyond that minors should also be divided into children and adolescents, because minors are a heterogenous group in how they are assessed and how they deal with these situations.

The medical examiner's evaluation of sexual assault cases (with or without intercourse) is an important responsibility that has significant implications in the legal system. The medical examiner interviews the victim and performs a general and gynecological physical exploration in order to identify possible injury (photo documentation), evaluate the victim's acute psychological state, and collect toxicological and biological forensic evidence. All this is done individually and adapted to each particular case and victim.

Sexual assault involves many different institutions and professionals such as police, prosecutors, judiciary, forensic doctors, hospital doctors, groups of victims and associations, psychologists,

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and psychiatrists. Everyone may benefit from shared and enhanced knowledge as well as from being specifically and properly trained. Sexual assaults represent a tragic and difficult situation for the victim, family and environment. Therefore, it is important to have additional knowledge of this phenomenon and its relationship with the potential risk factors. Having a deeper understanding of the risk factors of sexual assault may improve the health profession in general, day to day implementation, effectiveness of examinations, and prevention.

1. Objectives

The main objective of this study is to describe the characteristics and to ascertain risk factors of victims of sexual assault according to three age groups: children (victims less than 12 years), adolescents (aged 13–17), and adults (victims over 18 years). We also analyzed the associated factors correlated with the presence of physical injuries observed during the medical examination and with sexual assaults with penetration.

2. Materials and methods

This study was conducted in The Basque Institute of Legal Medicine (IVML), an agency that provides support to courts, tribunals and prosecutors of the Autonomous Basque Community. IVML conducts forensic reports and depends exclusively on the Department of Justice and Public Administration of the Basque Government. Data was retrospectively obtained from a case database of forensic medical examination records of sexual assault victims in Bizkaia, in a two-year period (2009–2010). Victims had reported a sexual assault to the Justice Department and were required to undergo a forensic medical examination.

In this study, sexual assault is defined according to the Spanish penal code as actions that go against one's sexual freedom and indemnity. This includes: sexual aggression (whoever impinges on the sexual freedom of another person accomplished through violence or intimidation, without or with penetration; penetration is considered sexual intercourse or penetration of the vagina, anus or mouth by a penis, or penetration of the vagina or anus by a body part, or any object); sexual abuse (acts without violence or intimidation and without consent, carried out against sexual freedom and indemnity of another person. It is considered non-consensual sexual abuse if sexual acts are carried out on persons who are deprived of sense, or take advantage of a person's mental disorder, as well as those overriding the will of the victim through the use of medications, drugs or any other natural or chemical substance. Also when consent is obtained through coercion by a person in a superior position abridging the freedom of the victim); sexual aggressions and abuse to minors under 13 years; sexual harassment, exhibitionism and sexual provocation and prostitution and the corruption of minors.[3]

The data was obtained from medical examination records. None of the cases were excluded from the study, although some data was incomplete either because the victim's examination was incomplete or because a particular piece of data was not relevant to the case. Examination of the victims was performed by the medical examiner of the Institute of Legal Medicine of the Basque Country. When the exam was done at a hospital, it was performed together by the medical examiner and the gynecologist or the pediatrician on duty for emergency service.

The collection of biological and toxicological samples was always conducted under the guidance of a forensic doctor. The collection depends on the history of the assault and characteristics of the victim, and chain of custody was always preserved. The samples were sent to the National Institute of Toxicology and Forensic Science and to the laboratory of the Institute of legal medicine of the Basque country. After being analyzed, the results were added to the corresponding case report.

The following data was obtained from the medical records and was used as variables in the analysis:

1. Demographic characteristics of the victim: age, gender and nationality.
2. Vulnerability of the victim when the attack occurred: defined as a history of physical and/or mental disability, psychiatric disorders, substance abuse, organic pathology or combinations thereof.
3. Place of sexual assault: in or outside place of residence or home. The place of residence may not necessarily be the victim's home.
4. Place of medical examination: hospital or Institute of Legal Medicine.
5. Number of assailants: only one or multiple.
6. Relationship to assailant: The assailant was classified as a stranger when the victim didn't know the offender or acquaintance. The offender was also classified as a family member, which includes any relative by direct bloodline or in-law, or aggressor outside the family.
7. Number of assaults: only one assault or repeated assaults.
8. Type of sexual assault: assault with or without any kind of penetration.
9. Results for toxicological analysis searching for alcohol or drugs: tests were performed when the clinical history involved any drugs or if signs of intoxication were present in the exploration. Urine or/and blood samples were collected after victim gave informed consent to take the sample.
10. Results for biological analyzes of offender's DNA or sperm: after giving informed consent to take the sample, extraction of the sample was performed when the clinical history suggested that offender's DNA could be obtained; DNA may had been left on the victim's body or clothing.
11. Presence of any physical injury in the medical examination: bruises, abrasions, cuts, burns, fractures, bites, wounds or scratches.
12. Presence of psychiatric injury in short-term follow-up evaluation: adjustment disorders, anxiety disorders, depressive disorders, dissociative disorders, somatoform disorders, personality disorders, substance-related disorders or combinations thereof.

Victims were grouped into three age classes: victims 12 years or under, age 13–17, and over 18 years.

2.1. Statistical analysis

Descriptive statistics were performed for the variables listed above. The analysis of the association of qualitative variables was made using χ^2 tests. The strength of association between variables is provided by measuring the relative risk, offering the corresponding confidence intervals, which was calculated with Epi Info. Epi Info is public domain software designed by the Centers for Disease Control, particularly useful for public health, to create databases and analyze the statistics of epidemiology. A logistic regression model was used for the statistical multivariate analysis, using SPSS version 18.0 statistical software. The test results were considered significant for $p < .05$.

3. Results

There were 224 sexual assault victims, aged from 2 to 80 years. The percentage of victims in each age class increased with age, with

29% in children, 16.7% in adolescents and 54% in adults. The average age of children sexual assault victims was 7.22 years, adolescents 14.89 years, and adults 33.04 years. There were more female victims (209 cases, 93.3%) than male victims (15 cases, 6.7%). This pattern was consistent for all age groups, with female victims 83.1% of children cases (54 of 65), 89.2% of adolescent cases (33 of 37), and 100% of adult cases (120 cases).

A total of 71.1% of the subjects were Spanish and 28.9% were foreigners. From the Spanish victims, 35.5% (55 of 155) were children; 16.8% (26 of 155) were adolescents (13–17 years old) and 47.7% (74 of 155) were over 18 years. Of foreign victims, 12.7% (8 of 63) were children, 15.9% (10 of 63) were adolescents and 71.4% (45 of 63) were over 18 years. Foreign victims had a higher percentage in the older age group. Vulnerable victims represented 36.8% of the cases (74 of 201), and nearly 55% of the vulnerable victims were over 18 years.

The medical examinations were done at hospitals in 56% of the cases (121 of 224) and 44% (95 of 216) of the victims were examined in the Institute of Legal Medicine. The percentages for examination in the hospital for each age group were: 47.7% for children; 43.2% for adolescents, and 64.9% for adults.

Sexual assault with penetration consisted of 57.8% (100 of 173) of the cases. The percentages of the assaults with penetration increase with the age of victims: 27.8% in victims 12 years or under; 48.0% in adolescent victims (13–17 years), and 77.7% for adult victims.

Most cases involved a single assailant, 86.5% (180 of 208). However, of the total cases with multiple offenders 75% (21 of 28) involved adult victims. The percentage of victims with more than one assailant involved was 1.6% (1 of 63) of children, 17.1% (6 of 35) of adolescents and 19.1% (21 of 110) of adults.

The victims reported only one incident of sexual assault in 51.0% (103 of 202) of the cases. The rest of the cases reported that the assault consisted of more than one episode (or continuous sexual assaults). The repeated assaults were more frequent in children aged 12 or under 76.6% (44 of 59), than in adolescents 44.4% (16 of 36) or adults 36.4% (39 of 107).

In 21% of the cases the assailant was a stranger (47 of 222). The percentage of assaults committed by a stranger increased with age: 6.2% (4 of 47) in children, 27.0% in adolescents (10 of 47) and 27.5% in adults (33 of 47). While the perpetrator was a family member of the victim in 41.5% of the cases (90 of 217); 56.3% in children (36 of 64 cases); 33.3% in adolescents (12 of 36 cases) and 35.9% in adults (42 in 117).

Approximately half, 54.2% (116 of 214), of all the sexual assaults happened at home or place of residence: 67.7% in children (42 of 62); 48.6% in adolescents (18 of 37) and 48.7% in adults (56 of 115).

After the forensic examination, 30.6% (66 of 216) had evidence of physical trauma, whereas 69.4% (150 of 216) had no documented injuries. The percentage of physical injury increased with age: 6.2% (4 of 65) in children, 22.9% in adolescents (8 of 35) and 46.6% in adults (54 of 116).

There was evidence of short term psychiatric trauma in 48.2% (68 of 141) of the victims. The percentages with psychiatric trauma by age group are: 30.5% (18 of 59) in victims 12 or under; 54.8% (17 of 31) in victims 13–17 years, and 64.7% (33 of 51) in victims older than 18 years.

Biological sampling was performed with positive results for DNA extraction in 51.5% (52 of 101 cases). The percentages of positive results for each group were: 7.7% (4 of 52) for 12 years or under, 11.5% (6 of 52) for 13–17 years, and 80.8% (42 of 52) for 18 or older.

Toxicological analysis (on blood or urine) was performed in 71 cases: 54.9% (39 of 71) yielded positive results for alcohol or drug involvement. The percentages of positive results increased with age: no positive cases in children; 7.7% (3 in 39) in adolescents, and 92.3% (36 in 39) in adults.

The first column of Table 1 presents the occurrence rate, expressed as a percentage, by age class, of the various assault characteristics. The second column shows the relative risks (RR), using the youngest age group (12 years or under) as the reference. The third column shows the 95% confidence intervals.

The relative risk analysis showed that risk for many of the variables shifts with age group. The proportion of foreign victims increases substantially with age: adolescent victims nearly doubled the risk of children victims, and adults almost tripled it. In victims over 13 years, sexual assaults committed by strangers are more than 4 times more frequent than victims 12 or under. The percentage of victims attacked by a family member decreases significantly with age. Assault by a family member occurs 1.57 times more frequently in children under 12 years than in other age groups. Sexual assaults committed out of home or place of residence, occur less frequently in children of 12 years or under. Sexual assaults out of home are 1.5 times more frequent in adolescents and adults as compared to children. Sexual assaults which involve more than one assailant occur most frequently with adolescents and adults than victims under 12 years. Sexual assaults consisting of a single attack occur more than twice as often in adolescents or adults than in victims 12 years or under. Data shows that the proportion of

Table 1
Results of percentages and univariate analyzes of factors associated for each age class among victims of sexual assaults.

Factors	%	*RR*	95% CI
Victims of foreign nationality (not Spanish)			
≤12 years	12.7	1	
13–17 years	27.8	2.19	[.95–5.04]
≥18 years	37.8	2.98*	[1.50–5.92]
Sexual assault committed by a stranger			
≤12 years	6.2	1	
13–17 years	27	4.39*	[1.48–13.02]
≥18 years	27.5	4.47*	[1.66–12.06]
Sexual assault committed by a family member			
≤12 years	56.3	1	
13–17 years	33.3	.59*	[.36–.99]
≥18 years	35.9	.64*	[.46–.88]
Sexual assault committed out of home			
≤12 years	32.3	1	
13–17 years	51.4	1.59*	[1.06–2.38]
≥18 years	51.3	1.59	[.99–2.57]
Multiple offenders			
≤12 years	1.6	1	
13–17 years	17.1	1.19*	[1.02–1.39]
≥18 years	19.1	1.22*	[1.1–1.34]
Single incident			
≤12 years	25.4	1	
13–17 years	55.6	2.19*	[1.29–3.70]
≥18 years	63.6	2.50*	[1.58–3.96]
Vulnerable victims			
≤12 years	9.4	1	
13–17 years	34.4	1.58*	[.95–2.63]
≥18 years	54.3	5.79*	[2.65–12.65]
Sexual assault with penetration			
≤12 years	27.8	1	
13–17 years	48.0	1.62*	[1.06–2.47]
≥18 years	77.7	2.80*	[2.80–4.36]
Physical injury			
≤12 years	6.2	1	
13–17 years	22.9	2.04*	[1.07–3.86]
≥18 years	46.6	3.71*	[1.20–11.47]
Short term psychiatric injury			
≤12 years	30.5	1	
13–17 years	54.8	1.18*	[1.09–2.96]
≥18 years	64.7	2.12*	[1.37–3.28]

Note. RR = relative risk; CI (95%) = 95% confidence interval.
*$p < 05$.

Table 2
Results of multivariate logistic regression of factors associated with evidence of physical injury in the forensic examination among victims of sexual assaults.

Factors	B	*SE*	Wald	*df*	Sig.	Exp (B)
Age						
≤12 years			17.289	2	.000	
13–17 years	1.354	.83	2.626	1	.105	3.873
≥18 years	2.793	.70	15.61	1	.000	16.33
Vulnerability	−.881	.44	3.933	1	.047	.414
Acquaintance	−1.065	.50	4.424	1	.035	.345
Assault with penetration	1.073	.50	4.615	1	.032	2.925
Constant	−2.219	.74	8.872	1	.003	.109

Note. B = logistic regression coefficient; SE = standard error; Wald = Wald statistics; *df* = degrees of freedom; Sig. = significance level; Exp (B) = Exponential B.

vulnerable victims increases significantly with age. The presence of vulnerability factors in sexual assault victims aged 18 or over is five times higher than in those younger than 12 years. Sexual assaults involving any kind of penetration also increase with age. Physical injury increases significantly with age, doubling the risk for the group of 13–17 years and tripling the risk in adults, as compared to the group of children under 12 years. Short term psychological injuries are more prevalent in older age groups than minors. The risk of psychological injury in adolescence and adults is higher than for children.

Table 2 presents the results of multivariate logistic regression analysis that evaluated how physical injury is related to the following factors: age groups, vulnerability, unknown assailant and assault with penetration. Sexual assaults with evidence of physical injury were related significantly with the increment of age. Vulnerability factors in victims are significantly inversely associated with risk of injury in sexual assaults, indicating that vulnerability factors reduce the risk of physical injury in the medical examination. When the assault has been committed by an acquaintance the risk of physical injuries in the sexual assault decreases significantly. The presence of physical injury in the forensic medical examination is also significantly associated with sexual assaults with penetrations.

Table 3 presents the results of multivariate logistic regression analysis of factors related to the sexual assaults where penetration occurred with regards to age groups and place of residence. It is observed that sexual assaults with penetration are related significantly to older age groups. There is a significant negative association between sexual assault with penetration and the assault occurring at the home or place of residence.

4. Discussion

This is a retrospective study and the sample consists of all cases explored by medical examiners in 2009 and 2010, for which a standard examination protocol was used. There is no selection bias. This sample represents all the victims reporting a sexual assault that were examined by medical examiners in Bizkaia. Therefore the results would be extendable to the population of victims who report sexual assaults in a similar sociocultural environment. The loss of subjects has been minimal, which has reduced information bias due to missing subjects. The classification criteria in the different factors have been established with unique criteria and medical examiner's actuation was standardized.

Table 3
Results of multivariate logistic regression of factors associated with sexual assaults with penetration.

Factors	B	*SE*	Wald	*df*	Sig.	Exp(B)
Age						
≤12 years			32.121	2	.000	
13–17 years	1.062	.538	3.898	1	.048	2.891
≥18 years	2.518	.448	31.568	1	.000	12.409
Assault committed at home	−.944	.402	5.503	1	.019	.389
Constant	−.703	.321	4.794	1	.029	.495

Note. B = logistic regression coefficient; *SE* = standard error; Wald = Wald statistics; *df* = degrees of freedom; Sig. = significance level; Exp (B) = exponential B.

Taking into account most of the studies published, the reported percentage of females in cases of sexual violence is over 90% and the mean age is 20–25 years for women.[9,11–14,17,19–21,24]

The age distribution of the victims (victims under 12 years, 29.3%; for ages 13–17, 16.7%; and ages 18 or older, 53.6%) is concordant with data from other studies.[2,11,22]However, our study differs from others because our sample composition included children.[13,14]

There are few studies in the literature that report the nationality of the victim. The prevalence of foreign victims in other studies[11,24] is lower (2.6–16%) than in our study. We found that 71.4% of the foreigner victims were over 18 years, which may be related to the different immigration rates of foreigners and differing age structure of immigrant population by country.

In total, 36% were vulnerable victims and 55% of those were adults. This may reflect that being young (a child or a teenager) is already a prognostic factor of vulnerability; meanwhile adults need other vulnerability factors such as physical or mental disability. Nannini[17] concluded in her study that women who were assaulted at older ages, particularly age >30 were 3 times more likely to be disabled than younger women. The studies suggest that disability increase victim's risk for sexual assault.[4,9,10,14,15,17,19]

Examinations performed in hospitals, instead of the institute of legal medicine, showed different percentages for each age group: 47.7% for children; 43.2% for adolescents and 64.9% for adults, showing an increase in adult cases. This may be explained by the need for medical treatment, such as treatment of injuries or prophylaxis of sexually transmitted infections, which reinforces the association of injuries and assaults with penetration with increasing age. The second reason may be related to the time of the assault; if the assault is recent, the victim will probably go to the hospital, but disclosing childhood abuse normally takes time and delays the examination which will then be conducted in the institute dependencies.

Assaults with penetration cases have occurred primarily in adults with a higher percentage (77%) than children (RR = 2.8). Other studies show similar prevalence.[12–14]There is also higher risk (RR = 1.62) in the group of adolescents than in children. This could be explained by the natural maturation and progressive growth of children with age.

As in the consulted bibliography, most of the cases are committed by a single assailant.[6,9,17,19,21]This research suggests that cases of single assailants occur mainly in minor victims; meanwhile multiple offender cases are more related with adult age class (75% from the totality of the assaults with multiple assailants). Multiple episodes of assault occurred most often in children under 12 years (44% of all multiple episode cases). In children, 76% of sexual abuse involved multiple assaults, so this means that there is greater risk of multiple episodes for children.

The fact that the majority of perpetrators were known was similar to those previously reported, though it depends on the study, with percentages ranging from 47% to 88%.[9,13,17,19–21] Sexual assaults by strangers are found mostly in adults (accounting for 70% of the cases perpetrated by strangers). Only 6% of the total cases of children were committed by a stranger and 27% for teenagers. Data suggests that in cases of minors, the perpetrator is usually someone that they know, often a close family member or from the family environment (55%), which is similar to other studies.[9,17,20,22]

Other researches have also revealed high prevalence of sexual assaults at homes or place of residence, ranging from 56% to 89%.[9,13,17,19–21] This study shows that percentage of children that were victims of sexual assault at place of residence was higher than other groups (68%). Sexual assaults with intercourse were inversely correlated with assaults at place of residence.

Bibliography data reported evidence of physical injury from 39% to 70%.[5,6,9,14,19,20] Data globally may be lower in this study than in other studies because of the higher number of minor victims in our sample.[14,21] From the total of victims over 18 years, 81.8% had evidence of physical trauma, which is similar to other studies that find a range from 67% to 78%.[11,14–16,18,21]The relative risk analysis showed that risk for physical injury increases significantly with age, doubling the risk for the adolescents as compared to children.

Short term psychiatric trauma was identified in 48.2% of the victims. Percentages of psychiatric trauma were related with age class: The risk of psychological injury in adolescence is 1.18 more and adults 2.12 more than for children. However it is uncertain if long term psychiatric injury may emerge as children victims reach adulthood.

One hundred and one victims accepted biological sample collection for offender's DNA testing. Positive results were obtained (51.5%) of the biological sample and 80% of those positive cases were from adult victims and this may be related to the higher incidence of penetration in adult victims than in minors. This data is consistent with an overall reported rate of 30–54% in recent reports.[9,12,14,19,21]

Previous studies found that 41%–57% of women victims were positive for drug or alcohol use.[6,9,12,14,19,20] In our study, from victims over 18 years (that accepted sample collection), the toxicological studies revealed that 92% were positive for alcohol or drug involvement. This indicates that there should be increases in sampling collection for toxicological studies in medical examinations.

Evidence of physical injury, assault with penetration and unknown attacker were positively correlated with victims age, meanwhile, vulnerability was negatively correlated, as was also found in previous reports.[4,6,11,13,18,19,23]

5. Conclusions

In conclusion, there are significant differences in the characteristics of sexual assault cases not only between adults and minors, but between cases occurring during childhood and adolescence. This study found that risk factors are different between children and adolescents, which are often lumped together.

It is complicated determining commonalities and differences in sexual assault patterns between victims of different ages. It seems that the group of adolescents is an intermediate group, and depending on the variable analyzed it resembles either children or adults. These differing patterns may be a reflection of the progressive growth of children during their natural maturing stages.

Since minor victims represented practically 50% of the total cases, it appears that there is a shortfall in the prevention of sexual abuse for minors, especially children, who have higher risk of continued abuse in the home or family setting. Increasing information and knowledge of high risk categories available to professionals involved with minors, mainly teachers, pediatricians and social workers, as well as disseminating the information through public awareness campaigns to inform potential close relatives may help reduce cases of sexual abuse in children. These results provide helpful information to better assess the situation, to develop and adapt prevention campaigns aimed at each age group, to improve the knowledge of professionals involved with victims, and to adapt legal measures to provide better interventions.

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